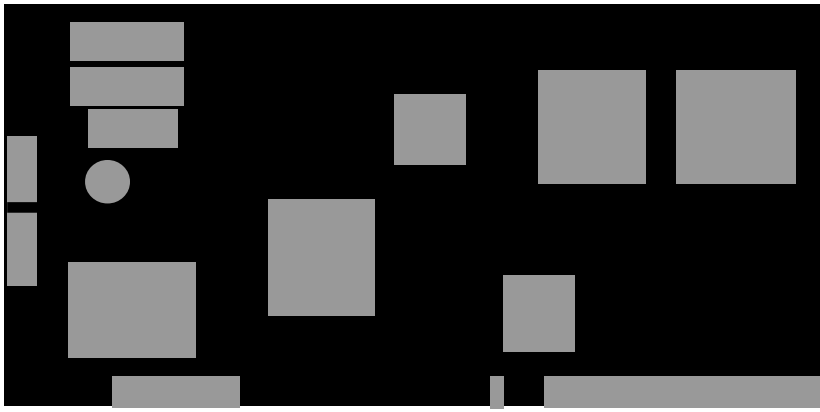
MultiTech® Systems



# Intelligent Serial Interface (ISI) Model ISI552PC Card

# Owner's Manual

Owner's Manual
P/N 82033101, Rev. B

ISI552PC

This publication may not be reproduced, in whole or in part, without prior expressed written permission from Multi-Tech Systems, Inc.. All rights reserved.

Copyright © 1994, by Multi-Tech Systems, Inc.

Multi-Tech Systems, Inc., makes no representation or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, Multi-Tech Systems, Inc., reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of Multi-Tech Systems, Inc., to notify any person or organization of such revisions or changes.

## Record of Revision

| Revision | Description |
|---|---|
| **B (12/25/94)** | Manual revised with minor technical, editorial and format changes. |

## TRADEMARKS

Multi-Tech, MultiExpress, MultiModem$^{II}$ and the Multi-Tech logo: Multi-Tech Systems, Inc.
i386, i486: Intel Corporation
PC-DOS: International Business Machines Corporation

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, Minnesota 55112 U.S.A.
(612) 785-3500 or (800) 328-9717
U. S. FAX 612-785-9874
Technical Support (800) 972-2439
BBS (612) 785-3702 or (800) 392-2432
Internet Address: http://www.multitech.com
Technical Writer: mark@multitech.com

## TABLE OF CONTENTS


**CHAPTER 1**
**INTRODUCTION & DESCRIPTION**

1.1 Introduction ..... 1-1
1.2 Product Description ..... 1-2
1.3 How to Use This Manual ..... 1-2
1.4 Technical Specifications ..... 1-3

**CHAPTER 2**
**HARDWARE INSTALLATION**

2.1 ISI Card Installation ..... 2-1
2.2 Determining Current System Settings . 2-1
2.3 Hardware Installation Procedure ..... 2-3

**CHAPTER 3**
**SERVICE, WARRANTY, AND TECHNICAL SUPPORT**

3.1 Introduction ..... 3-1
3.2 Limited Warranty ..... 3-1
3.3 Tech Support ..... 3-2
3.3.1 Recording ISI552PC Information 3-3
3.3.2 Service ..... 3-4
3.4 About the Multi-Tech BBS ..... 3-5
3.4.1 How to Use the Multi-Tech BBS . 3-5
3.5 About CompuServe/Internet ..... 3-6
3.6 About Multi-Tech's Fax-Back Service .. 3-7
3.7 Safety Warnings ..... 3-8

Appendix A:
I/O Address Switch Settings A-1

***INDEX***

# *1.1* Introduction

The introduction of high speed, data compression modems, such as Multi-Tech's MultiModem$^{II}$ ™ Series, has shown that many PC serial ports are unable to keep up, essentially becoming a bottleneck for the entire system. The ISI552PC card is a dual port serial expansion card and provides processing power to reliably transmit data up to 115.2K bps per port. Each port can be independently configured for asynchronous full duplex communications. Using an ISI enables your system's processor to perform more efficiently. This is because the ISI handles all of the byte-by-byte interrupts generated by the asynchronous terminals and stores the data in buffers. The ISI then generates one interrupt for an entire block of information and transfers the block to the system's microprocessor.

This manual provides the hardware installation procedures for the ISI552PC card. The operation of the card provides the basis for its name ISI (*Intelligent Serial Interface*), 552 indicating the processing power of a *16550A UART* and dual port support, and PC indicating that it is an *ISA bus card* (8 bit), which is able to operate in any 286, 386, or 486 ISA or EISA compatible bus personal computer. The ISI552PC serial ports can be accessed by any software written to the 16550A specification.

This manual contains product specification, installation instructions, configuration and technical support information which will assist you in the operation process. It is assumed that you have basic PC skills at the very least. Therefore, we have not included step-by-step instructions for basic operations such as logging in and file editing, etc.

## *1.2 Product Description*

The ISI552PC card is a dual-port serial expansion card which adds data buffering for enhanced serial port performance. The ISI552PC features two 9-pin connectors ( DB-9s), and is a "half-size" expansion card that supports a high-speed interface (up to 115.2K bps per port via 32K bytes of RAM). The ISI552PC features two banks of 8 DIP-Switches for I/O address selection and two jumper blocks for IRQ level selection.

## *1.3 How to Use This Manual*

This chapter begins with a short introduction, product description, followed by a guide (which you are now reading) to the use of this manual, as well as the ISI552PC's technical specifications.

This manual includes hardware configuration and installation procedures described in Chapter 2. Chapter 3 covers technical support, warranty and BBS information. Appendix A describes complete information on Base I/O addressing.

## *1.4 Technical Specifications*

**Computer Requirements**

· 286-, 386- or 486- based PC or compatible

**Operating Temperature**

· 0° to 50°C (32° to 120°F)

**Serial Interface**

· RS232C, RS232D

**Bus Type**

· IBM PC standard (ISA bus) or EISA

**Power Consumption**

· 750 mAmps @ +5 VDC
· 100 mAmps @ +12 VDC
· 100 mAmps @ -12 VDC

**Card Dimensions**

**ISI552PC**
- 4.950" L x 4.2" W x .062" D
- 12.573 cm L x 10.668 cm W x .16 cm D

**Baud Rates**
- Up to 115.2K bps per port (two)

**Connector Types**
- Two DB-9s on ISI552PC

**I/O Address**
- Set by hardware DIP-Switch, valid range 100H to 3F8H (See Appendix A)

**Interrupt Request**
- Set by hardware Jumper, valid IRQs -- 2, 3, 4, 5, 7, 10, 11, 12, & 15

## 2.1 ISI Card Installation

This chapter explains procedures for installing your ISI552PC card into your ISA or EISA bus personal computer (PC/XT/AT/PS/2 Models 25 and 30 or equivalents).

Hardware installation involves:

1) Opening your PC.

2) Setting card configuration (determining I/O address DIP-Switch setting and IRQ jumper setting).

3) Installing the card into the PC.

## 2.2 Determining Current System Settings

When you install a serial device into your computer, the processor must have a means of routing information to and from the device and the device must have a means of gaining the processor's attention. These are called Input/Output (I/O) addresses and Interrupt Requests (IRQs), respectively. The ISI552PC card requires eight I/O addresses and one IRQ value which are not used by any other device in your system. When selecting a unique base I/O address, be sure that the other

addresses are also unused. (For example, if you use the base I/O address of 380h, addresses 380h-387h must be unused.)

To select an unused I/O address and an IRQ value, it may be necessary to find out which values are already in use. To determine your system's current settings, refer to Appendix A. ISI552PC port #1 is shipped with the IRQ set to level 3 and the base I/O address at 2F8 hex; and ISI552PC port #2 is shipped with the IRQ set to level 4 and the base I/O address at 3E8. If you are certain that these settings are not already in use, continue with the hardware configuration and installation.

**Note: If you choose IRQ 3 or 4, you may have to remove the serial I/O device from your configuration files. The ISI552PC cards do not allow you to select IRQ 6 because it is almost universally used for the floppy drive of a computer. Also, most computers will not be able to assign IRQ 2 to the ISI because IRQ 2 is used for slave control.**

## 2.3 Hardware Installation Procedure

Perform the procedures in Table 2-1 to configure and install the ISI552PC card into your ISA or EISA bus host computer.

**Table 2-1**

**ISI Configuration and Installation Procedure**

| Step | Procedure |
|---|---|
| 1 | Make sure your computer and any peripheral equipment connected to it, are turned off. Failure to do so may damage both your ISI card and your PC. The card may be installed in any 286-, 386- or 486-based computer with an ISA or EISA bus architecture. |

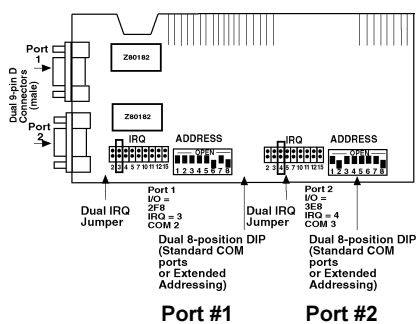
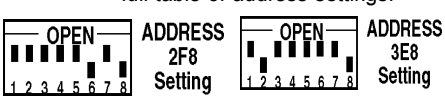



**Figure 2-1. I/O Address Switch/IRQ Jumpers**

**Table 2-1 (cont'd)**

| ISI Configuration and Installation Procedure | |
|---|---|
| **Step** | **Procedure** |
| 2 | Remove the cover of your computer as instructed in your computer's documentation. |
| 3 | Locate the unused slot(s) which you will be using for your ISI card, and remove the slot cover(s) per the instructions in your computer's documentation. |
| 4a | The figures below show the default settings for this card. Record any changes made to the Base I/O Address settings. The default Base I/O Address is 2F8 COM2 for Port 1; and the default Address for Port 2 is 3E8 COM3 . The valid range is 100H - 3F8 H; refer to Appendix A for a full table of address settings. |




**Port #1** **Port #2**

**Figure 2-2. I/O Address Default**

**Table 2-1 (cont'd)**

**ISI Configuration and Installation Procedure**

| Step | Procedure |
|---|---|
| 4b | Select a unique I/O Address for your ISI552PC card using the block of 8-position DIP-Switches on your ISI circuit board. Figure 2-3 (next page) shows various I/O addressing and IRQ settings. |
| 5 | **Record any changes you make to these settings and keep them handy for the driver installation.** |

~Notes~

Table 2-1 (cont'd)

**ISI Configuration and Installation Procedure**

**Com Port I/O Address Setting IRQ Level**

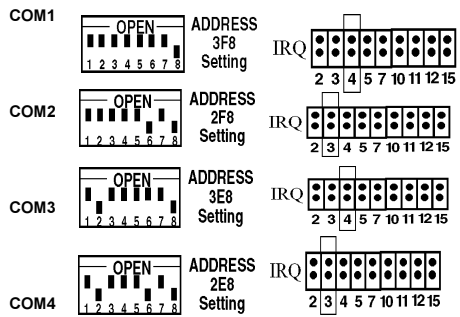


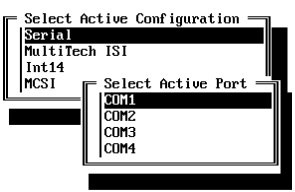

**Figure 2-3. I/O Address and IRQ Level Settings**

| Step | Procedure |
|---|---|
| 6 | Install the ISI card into the selected expansion slot(s) in the same manner as any other add-on card, as instructed in your computer's documentation. |
| 7 | Fasten the retaining bracket to the computer chassis and replace the cover. |

**Table 2-1 (cont'd)**

| ISI Configuration and Installation Procedure | |
|---|---|
| **Step** | **Procedure** |
| 8 | Connect the appropriate cable to the ISI card. The ISI552PC has one DB-9 connector. The DB-9 is a DTE-type serial port suited for the connection of Data Circuit-terminating Equipment, or DCEs.<br><br>**Note**: Any cables connected to the computer should be shielded to reduce interference. |
| 9 | Turn power on to your computer. |

If you are using MultiExpress communication software, note during your communication set-up that your ISI card is activated by choosing Serial and then Com port selection. Do not use the MultiTech ISI selection for this card. The MultiTech ISI selection is used with ISI models ISI502 and ISI508.



## 3.1 Introduction

This chapter starts out with statements about your ISI552PC's 10-year warranty. The next section, Tech Support, should be read carefully if you have questions or problems with your ISI552PC. It includes the technical support telephone numbers, space for recording pertinent information, and an explanation of how to send in this product should you require service. The final four sections explain how to use our Bulletin Board Service (*BBS*), sections on CompuServe and Internet forums, a description of Multi-Tech's Fax-Back service and a brief section on Safety Warnings.

## 3.2 Limited Warranty

Multi-Tech Systems, Inc. (*"MTS"*) warrants that its products will be free from defects in material or workmanship for a period of ten years from the date of purchase, or if proof of purchase is not provided, ten years from date of shipment. MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty does not apply to any products which have been damaged by lightning storms, water, or power surges or which have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products which prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

## *3.3 Tech Support*

Multi-Tech has an excellent staff of technical support personnel available to help you get the most out of your Multi-Tech product. If you have any questions about the operation of this unit(s), call 1-800-972-2439. Please fill out the information (below), and have it available when you call. If you require service, the tech support specialist will advise you in Multi-Tech's service procedure (Section 3.3.2).

### 3.3.1 Recording ISI552PC Information

Please fill in the following information on your Multi-Tech product. This will help tech support in answering your questions.

Serial No.:_____

Firmware Version:_____

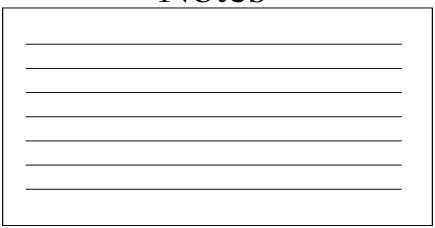
DriverType/Version:_____

*COM Port #:*_____

*IRQ Setting:*_____

Please note the status of your ISI552PC before calling tech support (e.g., screen messages, diagnostic test results, problems with a specific application, etc). Use the space below to note status:

~Notes~



### *3.3.2 Service*

If your tech support specialist decides that service is required, your unit may be sent (freight prepaid) to our factory. Return shipping charges will be paid by Multi-Tech Systems.

Include the following with this product:

- a description of the problem.
- return billing and return shipping addresses.
- contact name and phone number.
- check or purchase order number for payment if the ISI552PC is out of warranty. (The standard repair charge is $95. This price is valid at the time of this publication but could change in the future. Check with your technical support specialist.)
- if possible, note the name of the technical support specialist with whom you spoke.

If you need to inquire about the status of the returned product, be prepared to provide the **serial number** of the product sent (see Section 3.3.1). Send ISI552PC to this address:

MULTI-TECH SYSTEMS, INC.
2205 WOODALE DRIVE
MOUNDS VIEW, MINNESOTA 55112
ATTN: SERVICE OR REPAIRS

## *3.4 About the Multi-Tech BBS*

Multi-Tech Systems maintains a Bulletin Board Service (*BBS*) for its customers. The information available via the BBS includes: new product information, product upgrade data, problem solving tips, and a message service for you to leave questions for which you would like additional information. The phone number for the Multi-Tech BBS is (612) 785-3702 or (800) 392-2432 (U.S.A. and Canada).

The BBS can be accessed by any asynchronous modem operating at speeds of 28,800-1200 bps (V.34 and downward compatible) with a setting of word length of 8 bits, 1 stop bit, and no parity.

### *3.4.1 How to Use the Multi-Tech BBS*

To use Multi-Tech's BBS, perform the following steps.

1. Set your computer or communications program to "8N1", and to emulate ANSI (e.g., with MultiExpress software, press ALT-S and choose "ANSI").
2. Dial our BBS at 1-800 392-2432 (U.S.A. and

Canada) or 612-785-3702 (International).

3. At the prompt, type your first name, last name, password, then hit RETURN. If you are a first time caller, after you hit RETURN the BBS asks if your name is spelled correctly. If you say yes, our questionnaire is displayed. You can use our BBS on your first call.
4. There are four BBS areas: the Main Menu, the Files Menu, Bulletins (from the main Menu), and the Message Menu. All Bulletins are Menu-driven. To read the Bulletins, enter the number of the bulletin you wish to read.
5. File Menu: from the Main Menu, type **F:** and the Files are displayed. If you want a list of directories, type **L** (list directory) and then type **L** again for a list of all directories. If you do not type the second **L**, you will list all of the files on the BBS. At the list of the directories, select the number of directories required. A list of files and a description for each of the files is displayed. Select a file that you would like to download; if you already know the file name, type **D** at the Files Menu to download the selected file(s). Press **V** to view a text file.
6. At the Message Menu, you can leave a message to the Sysop (you can not read messages at this point). The BBS will tell you if you have a personal message (mail). At the prompt *(would you like to read it now?),* type **R** for read now. You must read your message(s) when you first access the BBS.

## 3.5 About CompuServe/Internet

In addition to the BBS, Multi-Tech provides support through CompuServe's Modem Vendor Forum (*GOMODEMVEN*) under *GO MULTITECH*. Refer to your CompuServe documentation for special operating procedures.

Multi-Tech is a commercial provider on the Internet, and we retrieve e-mail messages from the following mailboxes on a periodic basis:

| | |
|---|---|
| *tsupport@multitech.com* | Technical Support |
| *mtsmktg@multitech.com* | Marketing Dept. |
| *mtssales@multitech.com* | Sales Dept. |
| *international@multitech.com* | International Marketing & Sales |
| *writers@multitech.com* | Publications Dept. |

Multi-Tech's presence includes a Web site at:

*http://www.multitech.com*

and an ftp site at:

*ftp://ftp.multitech.com*

The ftp server mirrors the Multi-Tech BBS.

## 3.6 About the Multi-Tech Fax-Back Service

Multi-Tech's fax-back system provides 24-hour access to sales, marketing, and technical literature. Dial 612-717-5888, follow the voice prompts, and request document number 10 for a catalog of available documents.

For convenience, have your fax number handy: _____. From the catalog of available documents, you can order newsletters, white papers, press releases, etc. from the sales and marketing index (pages 1-4), or order basic modem operation and troubleshooting guides from the technical support and engineering index. Just enter the applicable FB Doc. # from the left column of the catalog.

## 3.7 Safety Warnings

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. This product is to be used with *UL* and *CUL* listed computers.
4. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
5. Use caution when installing or modifying telephone lines.
6. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
7. Do not use the telephone to report a gas leak in the vicinity of the leak.

82033101

**NOTE:** This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that of which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.
**WARNING**: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This device complies with Part 15 of the FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

# Product Update
# for ISI551PC & ISI552PC Cards
# #82048100

***July 12, 1995***

This product update is a supplement to your ISI551PC and/or your ISI552PC Owner's Manual(s). The user should take note of the following statement:

*CAUTION* - This serial communication card(s) is for use only with UL listed personal computers that have installation instructions detailing user installation of card cage accessories.

# Index


**A**

About CompuServe/Internet ..... 3-7
About the Multi-Tech BBS ..... 3-5

**B**

Baud Rates ..... 1-4
Bus Type ..... 1-3

**C**

Card Dimensions ..... 1-4
Computer Requirements ..... 1-3
Connector Types ..... 1-4

**H**

Hardware Installation Procedure ..... 2-3
How to Use the Multi-Tech BBS ..... 3-6
How to Use This Manual ..... 1-2

**I**

I/O Address ..... 1-4
I/O Address Switch and IRQ Jumper Locations ..... 2-3
Introduction ..... 1-1

ISI Card Installation ..... 2-1

**L**

Limited Warranty ..... 3-1

**M**

Multi-Tech BBS ..... 3-5

**O**

Operating Temperature ..... 1-3

**P**

Power Consumption ..... 1-3
Product Description ..... 1-2

**R**

Recording ISI552PC Information ..... 3-3

**S**

Serial Interface ..... 1-3
Service ..... 3-4

**T**

Tech Support ..... 3-3
Technical Specifications ..... 1-3

**W**

Warranty ..... 3-1

MultiTech® Systems